REMARKS/ARGUMENTS

In the Official Action, claims 1, 5, and 9 were rejected under 35 U.S.C. §103(a) over Applicants' Admitted Prior Art Figures 9-10 (and corresponding description on specification pages 1-3) in view of KEIICHI et al (English language Abstract of JP Hei 6-340452) and BARET et al. (U.S. Patent Application Publication No. 2005/0000561 A1). Claims 4 and 8 were rejected under 35 U.S.C. §103(a) over AAPA in view of KEIICHI, BARET, and KATSUMI (English language machine translation of JP Hei 9-196700).

Claims 1, 4-5, and 8-9 are currently pending for consideration by the Examiner. Claims 2-3, 6-7, and 10-11 have been previously cancelled.

Independent claims 1, 5, and 9 were rejected under 35 U.S.C. §103(a) over Applicants' Admitted Prior Art Figures 9-10 in view of KEIICHI and BARET. Applicants respectfully submit that the particular combination of features recited in each of independent claims 1, 5, and 9 would not have been obvious to one of ordinary skill in the art at the time of the invention over Applicants' Admitted Prior Art Figures 9-10 in view of KEIICHI and BARET, for at least several reasons.

Initially, Applicants submit that the pending claims are directed to a novel solution, which was not previously known in the art, to a distinct problem that is prevalent in the manufacturing of an electrostatic capacitance type of semiconductor physical quantity sensor. More specifically, the problem involves how to make a fixed electrode of an insulating substrate equipotential into a movable electrode, when the insulating substrate is anodically bonded to the semiconductor substrate, so as to prevent discharge from occurring, while obtaining high bonding strength and desired sensor characteristics, without causing bonding voids to occur and the sensor chip to increase in size.

Applicants also submit that their novel solution was not obvious to one or ordinary skill in the art at the time of the invention, as evidenced at least by the state of the relevant art as shown in the applied and cited references, and by the fact that the Official Action has had to piece together a distinct variety of references, in an attempt to reconstruct Applicants' claimed invention from the prior art.

More specifically with regard to independent claim 1, the Official Action asserts that Applicants' Admitted Prior Art Figures 9-10, and the corresponding descriptions, disclose the features recited in the claim preamble, and the features relating the "forming" of the equipotential wiring. The Official Action acknowledges that Applicants Admitted Prior Art Figures 9-10 fail to disclose the independent claim 1 features of *cutting and removing the equipotential wiring after the anodic bonding in which the equipotential wiring is cut by laser irradiation allowed to pass through from the insulating substrate.*

However, the Official Action asserts that KEIICHI discloses the cutting and removing of the equipotential wiring after the anodic bonding in which the equipotential wiring is cut by a laser. The Official Action also asserts that BARET discloses the cutting of conductors using a laser through a glass substrate. Contrary to these assertions, Applicants respectfully submit that neither KEIICHI, BARET, nor the combination thereof, remedy the distinct deficiencies of Applicants' Prior Art Figures 9-10 cited above. Thus, Applicants will point out in detail why KEIICHI and BARET fail to remedy the distinct deficiencies cited above.

Initially, it is noted that in making the assertion regarding KEIICHI, the Official Action is actually referring to Applicants' brief comments referring to KEIICHI, i.e., JP Hei 6-340452, provided in Applicants' specification page 3, lines 19-25. Applicants submit that the brief specification comments regarding KEIICHI, cited by the Official Action, only make a general

statement that a short-circuit conductive pattern is cut, for example, by a laser after anodic bonding. However, Applicants submit that the specification comments do not provide any details regarding the actual location of the short-circuit pattern, or specifically how the short-circuit pattern is cut. In fact, Applicants submit that a closer review of the actual KEIICHI reference reveals that KEIICHI does not disclose the cutting and removing of the equipotential wiring inside the bonding area, as is explicitly recited in claim 1. In distinct contrast, Applicants submit that KEIICHI only discloses the cutting or trimming of connection wiring outside of the bonding area, and in a manner that is not workable in the specific method recited in Applicants' claim 1.

More specifically, Applicants submit that KEIICHI discloses in Figures 1 and 2 that the fixed electrode output terminal lead (78) and the connection wiring (75), which serve as equipotential wiring, are exposed, i.e., outside of the peripheral bonding areas of the glass member (80), which is an insulating substrate. Thus, KEIICHI's sensor cannot obtain air-tightness in the sensor, such as the silicon structure (70), i.e., the movable semiconductor substrate, even if desired.

Applicants submit that the reasons why KEIICHI's fixed electrode output terminal lead (78) and connection wiring (75) are exposed out of the bonding area is because KEIICHI cuts the equipotential wiring (75) by "dicing". This distinction is evidenced in KEIICHI's paragraph [0033], which is translated as follows: "Further, although each of the above examples has described that the connection wiring 75 formed on the silicon structure 71 is cut by dicing after anodic bonding, it can also be trimmed using, for example, laser."

Thus, Applicants submit that KEIICHI discloses dicing, which cannot be used in Applicants' claimed sensor (in which all of the fixed electrode, the movable electrode, the

bonding face-side surfaces of the insulating substrate and the semiconductor substrate, and the equipotential wiring are placed inside the bonding area), as the primary method of cutting the connection wiring (75).

In the quoted passage above, it is noted that KEIICHI suggests that trimming can also be used, instead of dicing, to trim the connection wiring. Once again, Applicants submit that KEIICHI is suggesting an alternative manner in which to trim the connection wiring that is located outside the bonding area.

Thus, from a more detailed analysis of the actual KEIICHI reference as discussed above, Applicants submit that it is readily evident that KEIICHI fails to disclose, teach, or suggest that all of the sensor elements be placed inside the bonding areas of the insulating substrate and the semiconductor substrate. Applicants further submit that KEIICHI also fails to disclose, teach, or suggest the using of an irradiated laser to pass through from the insulating substrate in order to cut and remove the equipotential wiring inside the bonding area, as recited in claim 1.

As noted above, the Official Action also asserts that BARET discloses the general cutting of conductors using a laser through a glass substrate. Applicants submit that BARET's general teaching of cutting conductors using a laser through a glass substrate is merely a recognition that, in general, such cutting was generally known in the art. In distinct contrast, Applicants submit that the specific cutting of equipotential wiring by a laser in a novel method for manufacturing an electrostatic capacitance type of semiconductor physical quantity sensor, as explicitly recited in independent claim 1, was not known in the art.

More specifically, Applicants submit that the equipotential wiring is used in Applicants' method for the purpose of discharge prevention in anodic bonding, i.e., for the purpose of making the movable electrode equipotential to the fixed electrode. After the equipotential wiring

is cut by the laser passing through from the glass substrate, the movable electrode is made movable relative to the fixed electrode, thus maintaining the air-tightness inside the peripheral bonding areas of the insulating substrate, and the semiconductor substrate. As a result, Applicants submit that the long term stability of the characteristics of the semiconductor physical quantity sensor can thus be maintained.

In distinct contrast, BARET relates to a method for producing a photovoltaic cell assembly. As discussed in BARET's paragraph [0095] cited by the Official Action, conducting strips in a precursor of a photovoltaic, i.e., solar, cell assembly are cut by laser through glass substrates for the purpose of connecting the photovoltaic cells in series as an assembly of photovoltaic cells.

Applicants submit that no elements in the photovoltaic cells in BARET are designed or expected to move relative to other cell elements. Applicants also submit that BARET does not provide any suggestion regarding using, or the possibility of using, the laser cutting through a glass substrate for a purpose of separating a movable electrode from a fixed electrode. Additionally, Applicants submit that BARET does not suggest using or modifying the laser cutting through a glass substrate so that it can be used in the technological area relating to semiconductor physical quantity sensors. Thus, Applicants submit that BARET'S general teaching of laser cutting does not suggest the use of laser cutting to cut equipotential wiring in a sealed bonding area in the specific manner recited in independent claim 1.

For at least the reasons discussed above, Applicants submit neither Applicants' Admitted Prior Art Figures 9-10, KEIICHI, BARET, nor the combination thereof, disclose or render obvious the specific combination of features recited in independent claim 1. Additionally, Applicants submit that independent claims 5 and 9, which recite features similar to the features

recited in independent claim 1 discussed above, are similarly not rendered obvious by the combination of applied references cited above.

In addition to the reasons discussed above regarding why the applied combination of Applicants' Admitted Prior Art Figures 9-10, KEIICHI, and BARET fail to render obvious the specific combination of features recited in independent claims 1, 5, and 9, Applicants submit that the Official Action has also impermissibly resorted to impermissible hindsight reconstruction in formulating the asserted rejection. Applicants submit that the Official Action has pieced together three distinct references from different technological areas, and has used Applicants' disclosure in doing so, in an attempt to piece together the specific combination of features recited in Applicants' independent claims. Applicants further submit that one of ordinary skill in the art at the time of the invention would not have combined the cited references in the manner asserted by the Official Action, as evidenced by the lack of such teachings or suggestions to do so in the applied prior art.

Thus, for at least the reasons discussed above, Applicants submit that the specific combination of features recited in independent claims 1, 5, and 9 would not have been obvious to one of ordinary skill in the art at the time of the invention in view of Applicants' Admitted Prior Art Figures 9-10, KEIICHI, and BARET. Accordingly, Applicants respectfully request that the rejection of claims 1, 5, and 9 under 35 U.S.C. § 103(a) be withdrawn.

Claims 4 and 8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicants' Admitted Prior Art Figures 9-10, in view of KEIICHI, BARET and KATSUMI. Applicants submit that KATSUMI fails to remedy the deficiencies of Applicants' Admitted Prior Art Figures 9-10, KEIICHI, and BARET discussed above. Thus, Applicants respectfully submit that claims 4 and 8, which depend upon independent claims 1 and 5, respectfully, would not have

been obvious in view of the applied combination of references for at least the reasons discussed above, and further for the additional reasons provided below.

With regard to claims 4 and 8, the Official Action acknowledges that the combination of Applicants' Admitted Prior Art Figures 9-10, KEIICHI, and BARET fails to disclose the claim feature that *the equipotential wiring has a reduced wiring width at a cutting location thereof*, wherein the cutting is performed by laser irradiation. However, the Official Action asserts that KATSUMI discloses this feature, citing KATSUMI's Figure 9A and paragraphs [0043]-[0044].

Contrary to this assertion, Applicants submit that KATSUMI teaches away from Applicants method by teaching the cutting of wiring at a point of increased resistance using the application of an electric current, and by failing to teach the cutting of equipotential wiring by laser irradiation. More specifically, Applicants submit that KATSUMI's Figure 9A discloses an electrically conductive pattern (23") extending from the lead (22) of the fixed electrode (21), which is designed to have a width W2 smaller than a width W1 of the lead (22), so as to allow the conductive pattern (23") to be securely fused and blown out by the application of electric current. Applicants submit that the portion of the wiring with the increased resistance is more likely to cause discharge in anodic bonding due to insufficient equipotentiality, which distinctly teaches away from the main purpose of equipotential wiring and Applicants' claimed methodology. In contrast, Applicants claimed methods explicitly recite the use of laser irradiation, which is allowed to pass through from the insulating substrate, making it unnecessary to provide a portion of the equipotential wiring with an increased resistance that may cause discharge in anodic bonding. Thus, Applicants submit that KATSUMI fails to disclose an equipotential wiring having a reduced wiring width at a cutting location that is cut by laser irradiation that passes through the insulating substrate, as claimed. Additionally, Applicants

submit that KATSUMI teaches away from Applicants' invention by teaching the use of an electric current to blow out wiring at a point of increased resistance, which is likely to cause discharge in anodic bonding due to insufficient equipotentiality.

Furthermore, Applicants submit that this rejection provides further evidence of the Official Action impermissibly resorting to impermissible hindsight reconstruction in formulating the asserted rejection. Applicants submit that the Official Action has pieced together four distinct references from different technological areas, and has further used Applicants' disclosure as a roadmap, in an attempt to piece together the specific combination of features recited in Applicants' claims 4 and 8. Applicants further submit that one of ordinary skill in the art at the time of the invention would not have combined the cited references in the manner asserted by the Official Action, as evidenced by the lack of such teachings or suggestions to do so in the applied prior art.

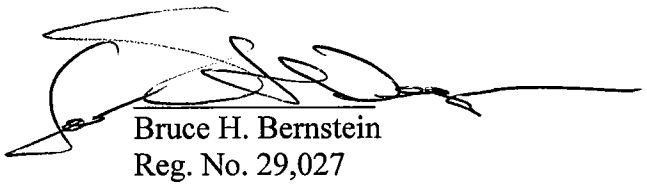
Thus, for at least the reasons discussed above, Applicants submit that the specific combination of features recited in claims 4 and 8 would not have been obvious to one of ordinary skill in the art at the time of the invention in view of Applicants' Admitted Prior Art Figures 9-10, KEIICHI, BARET, and KATSUMI. Accordingly, Applicants respectfully request that the rejection of claims 4 and 8 under 35 U.S.C. § 103(a) be withdrawn.

SUMMARY

From the remarks and arguments provided above, Applicants submit that all of the pending claims in the present application are patentable over the references cited by the Examiner, either alone or in combination. Accordingly, reconsideration of the outstanding Official Action is respectfully requested, and an indication of the allowance of claims 1, 4-5, and 8-9 is now believed to be appropriate.

Should there be any questions, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully Submitted,
Ryosuke MESHII et al.



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